

**Claims**

1. Use of a live culture of a non-pathogenic food-grade probiotic bacterium in the treatment of infectious diseases.
- 5 2. Use as claimed in claim 1 wherein the infectious disease is a localised infection of the skin.
3. Use as claimed in any preceding claim wherein the probiotic bacterium is a non-pathogenic lactic acid bacterium.
- 10 4. Use as claimed in claim 3 wherein the lactic acid bacterium is a Lactococcus strain.
- 15 5. Use as claimed in claim 4 wherein the Lactococcus strain is selected from the group comprising; *Lactococcus lactis* DPC3147, *Lactococcus lactis* 5399, *Lb. plantarum* DPC4922.
- 20 6. Use as claimed in claim 1 to 5 wherein the disease is a mastitis infection.
7. Use of a freeze-dried preparation of a live culture of a non-pathogenic food-grade probiotic bacterium in the treatment of infectious disease.
8. Use of the supernatant of a live culture of a non-pathogenic food-grade probiotic bacterium in the treatment of infectious disease.
- 25 9. Use as claimed in claim 8 wherein the infectious disease is a localised infection of the skin.
- 30 10. Use as claimed in claim 8 or 9 wherein the probiotic bacterium is a non-pathogenic lactic acid bacterium.
11. Use as claimed in claim 10 wherein the lactic acid bacterium is a Lactococcus strain.

12. Use as claimed in claim 11 wherein the *Lactococcus* strain is selected from the group comprising; *Lactococcus lactis* DPC3147, *Lactococcus lactis* 5399, *Lb. plantarum* DPC4922.
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13. Use as claimed in any of claims 8 to 12 wherein the disease is a mastitis infection.
14. Use of a live culture of a non-pathogenic food-grade probiotic bacterium or the supernatant of a live culture of a non-pathogenic food-grade probiotic bacterium in the preparation of a medicament for the treatment of infectious diseases of humans and animals.
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15. Use as claimed in claim 14 wherein the infectious disease is mastitis.
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16. Use of a live culture of a non-pathogenic food-grade probiotic bacterium or the supernatant of a live culture of a non-pathogenic food-grade probiotic bacterium in a method of stimulation of the immune system.
17. Use as claimed in claim 16 where the live culture or supernatant is used to stimulate PMN cells.
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18. A pharmaceutical composition comprising a pharmaceutically effective amount of a non-pathogenic live culture of a food-grade probiotic bacterium or a pharmaceutically effective amount of the supernatant of a live culture of a non-pathogenic food-grade probiotic bacterium together with a pharmaceutically acceptable carrier or diluent.
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19. A method of treatment of infectious diseases comprising administering to a subject a pharmaceutically effective amount of a non-pathogenic live culture of a food-grade probiotic bacterium or the supernatant of a non-pathogenic live culture of a food-grade probiotic bacterium.
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20. A method of treatment as claimed in claim 19 wherein the infectious disease is localised to the skin.
- 5 21. A method of treatment as claimed in claim 19 wherein the infectious disease is localised to an infected wound.
22. A method of treatment as claimed in claim 19 wherein the infectious disease is localised to the urinary tract.
- 10 23. A method of treatment as claimed in claim 19 wherein the infectious disease is mastitis.
24. Use as claimed in claim 1 whereby there is an accelerated improvement in the quality of milk from cows with mastitis.
- 15 25. Use as claimed in claim 1 substantially as described herein with reference to Tables 1 to 7 and Figures 1 to 17 of the Examples.
- 20 26. A pharmaceutical composition as claimed in claim 18 substantially as described herein with reference to Tables 1 to 7 and Figures 1 to 17 of the Examples.
- 25 27. A method as claimed in claim 19 substantially as described herein with reference to Tables 1 to 7 and Figures 1 to 17 of the Examples.